REMARKS

Claims 1-3, 5-7, 9-12, 14-16, 18-20, 22, 23, 25-27 and 29 were pending in the application and all stand rejected. Reconsideration is requested.

35 USC §112 Rejection

The Examiner rejected Claims 1-3 et al. under 35 USC §112, second paragraph, stating that the term "significant" is a relative term which renders the claims indefinite. While this rejection is traversed, in order to further prosecution, the term "significant" has been deleted from all the claims thereby rendering this rejection moot.

35 USC §§ 112 and 103 Rejections

The Examiner rejected most of the claims under §102 as anticipated by Hogan. Further, the Examiner rejected Claims 2 and 10 under §103 citing Hogan and Newman, and rejected Claim 22 citing Hogan and Tanaka. These rejections were also made earlier. All these rejections are traversed and, it is respectfully submitted, overcome by the present amendments and arguments.

DSV

The concept of digital sum value (DSV) is well known to those skilled in the art. However, in case it assists, the following explains DSV with the help of the accompanying sketches produced by the applicants.

As is made clear in the specification of this application, the digital sum value (DSV) is a function of the encoded data at the pits and lands level on an optical disc. This is shown in Figure 3 of Hogan and in Figure 3 of the present specification. Both the present specification and Hogan explain the constraints applied when encoding data onto a CD and both the present specification and Hogan make it clear that it has long been known that encoding should ensure that the DSV should not be allowed to attain "a large accumulated DSV" (Hogan) or should have "as low a magnitude as possible" (the present specification).

Thus, in the digital domain, which is illustrated in Hogan and in the present specification, the DSV is to approach zero. If the DSV is +300, for example, it means that there are 300 more land values (+1) on the disc than pit values (-1).

When the pits and lands on the disc are read they provide a data signal known as the EFM signal. During reading an output head shines laser light onto the pits and lands to identify the transitions and outputs the EFM signal. In a perfect world the EFM signal would be a square wave but, in fact, all of the edges are rounded. Thus, the pits and lands on the disc generate an electrical output signal which is an analog representation of the pits and lands. Such an analog output signal is shown on page 1 of the enclosed sketches.

If the pits and lands have, in the digital domain, a DSV value approaching zero, the DC level of the analog output signal will similarly approach zero. If the digital DSV approaches a significant number then the analog signal is offset and has either a positive DC level or a negative DC level.

Clearly, the analog output signal is a complex waveform and will have components at different frequencies to its fundamental frequency. This is indicated on sheet 2 of the sketches where a waveform having a high rate of change, high absolute values and low frequency components is shown.

Hogan

While the Hogan reference bears some similarities to embodiments in accordance with this invention, there are differences which it is respectfully submitted are brought out in the present claims, both as earlier presented and as amended here. In order to make these distinctions even clearer, the present claims are amended as explained below and thereby even further distinguish over Hogan.

In common with the present invention, Hogan seeks to use an ability to put data which can provide DSV problems onto a disc to provide copy protection for that disc. However, in Hogan

special encoders have to be used to put the data on the disc. Furthermore, the data patterns of Hogan are chosen to provide a large accumulated DSV. This is made clear, for example, at column 3, lines 48-60, and at column 5, line 64 to column 6, line 41 as referred to by the Examiner.

Specifically, one difference between the present invention and Hogan is that in accordance with the present invention, see paragraph 65 of the published specification, "If the DSV has a rapid rate of change over a significant period of time or if the DSV has substantial low frequency components then the transitions in the EFM signal may be shifted from their ideal values and/or the ability of tracking and focus circuits in CD drives to maintain optimal head positioning may be compromised. This typically causes read failures from the CD."

The present claims are directed primarily to embodiments using the rapid rate of change of the DSV to cause the read failures.

Hogan takes a different approach. As pointed out repeatedly in Hogan, and as set forth in the Hogan Abstract ". . .the resulting decoded symbol sequence will likely be reencoded into channel bits having a large accumulated digital sum variance." (Emphasis added) This description of the large value of the DSV is repeated numerous times in Hogan, see for instance column 3, line 46 referring to "large accumulated DSV". See also immediately below, column 3, lines 50-53 again referring again to "large accumulated DSV". This is repeated at line 66, column 3, and as pointed out at column 6, beginning line 23 ". . .DSV accumulates in a negative direction indefinitely, as illustrated in FIG. 3B." This is further repeated at column 6, lines 42-43 and column 7, line 5. Additionally, even the sole claim of Hogan refers to "an accumulated digital sum variance that exceeds a predetermined limit;". (Hogan defines DSV as "digital sum variance"; the present specification defines DSV as "digital sum value." DSV is elsewhere defined as "digital sum variation." It is believed these all refer to the same parameter, and the present claims are intended to cover all of these.)

This is in contrast to the method in accordance with the present invention wherein the rapid rate of change of the DSV is the relevant factor. It is clear that Hogan's accumulated DSV

value is not the DSV rate of change; the rate of change of course is the derivative of the DSV value over time. Hence, these are clearly distinct and different both mathematically and practically.

In this context, it is respectfully submitted the Examiner perhaps did not pay full attention or give due weight to all aspects of the present claims. The Examiner's most relevant comments appear to be his "Response to Arguments" in his Action at page 9 where he states:

> The amendments to claim 1 now provide the standard that a "rapid" rate of change is constituted by either (1) "wherein the transitions in the EFM (eight to fourteen modulation) signal from the data patterns are shifted from their ideal values" or (2) "the ability of disc drives to maintain optimal head positioning is compromised". A system which meets either (1) or (2) satisfies the limitation of having a DSV "rapid" rate of change. Hogan's system meets both (1) and (2).
>
> Hogan discloses a method of inhibiting data copying which relies on standard encoders making non-optimal decision in data copying which leads to large accumulated DSV and errors. Hogan teaches that a low DSV is ideal and that large DSV is non-ideal in EFM encoding because a large DSV creates data errors (Col 2, lines 30-58). Since Hogan's system is built around having high DSV and high DSV is non-ideal, Hogan's system meets (1). Hogan also discloses (2). Hogan's system relies on a special encoder making decisions to place the encoder head in a seemingly non-optimal state in the short term in order to circumvent a long term path to large accumulated DSV. . .(Emphasis added.)

The Examiner's comments as underlined above point out the deficiency in his rejection. Hogan teaches that normally a low DSV is ideal and a large DSV is non-ideal. This of course refers to the accumulated value of the DSV, not its rate of change. It is possible to have a high rate of change and yet a relatively low accumulated DSV value at any time. As pointed out by the Examiner, Hogan's system provides large accumulated DSV. But there is no reference in Hogan, or even suggestion, of the rate of change of DSV being useful in this regard. Instead Hogan focuses on the accumulated DSV, that is its accumulated value rather than its instantaneous rate of change. These are not the same. Hogan's accumulated DSV is not the same as the rate of change of DSV. It is possible to have a large DSV value with a low DSV rate of change, or a high DSV rate of change

with a low DSV value. Hogan clearly only discloses the accumulated DSV as being relevant to his copy protection method and makes no reference to DSV rate of change.

It is indicated on page 1 of the accompanying sketches that the analog output signal is generally subject to top and bottom slicing. In this way, and as is also shown, a much squarer wave can be derived from the complex waveform output. Generally, the slicing circuit will find an average DC level over a period of time to set the slicing threshold. However, with the Hogan arrangement, the output signal from a copy disc will have a large accumulated DSV and hence a large offset from the zero DC level. The slicing circuit will not be able to compensate for offsets in excess of its specified maximum such that reading or playing of a copy disc will be a problem.

However, if the accumulated DSV is not outside of the limits of the slicing circuit, and if the DSV accumulates steadily, there is the possibility of a slicing circuit being able to generate an accurate square wave even though the output waveform does have a large accumulated DSV.

The applicants believe the copy protection provided by the present invention to be much more robust than Hogan. Thus in accordance with the invention the data patterns which are written to the copy disc are arranged primarily to have a DSV with a rapid rate of change. This has been found to compromise the ability of most disc drives to maintain good head positioning during reading. In addition, the rapid rate of change shifts the transitions in the output waveform. It is the location of these transitions which contains the information carried by the waveform so that shifting them has a profound negative effect on the readability of the disc.

Therefore it is respectfully submitted that the present claims distinguish over Hogan.

Claim Amendments

In this regard, the present claims have been amended, even though it is respectfully submitted that the claims as previously pending distinguish over Hogan. The claims are amended to be even clearer in this regard.

The term "significant" has been deleted from Claim 1 and the other claims, first to overcome the §112 rejection and also because it is believed this term is not required for patentability. Hence Claim 1 now recites (line 8) ". . .a DSV (digital sum value) to cause DSV problems for the writers of recordable discs, the data patterns being arranged to have a rapid rate of change over a period of time wherein as a result of the rapid rate of change the transitions in an EFM (eight to fourteen modulation) signal generated from the data patterns are shifted and the ability of disc drives to maintain optimal head positioning is compromised." Two amendments here add language to Claim 1. The first is that "as a result of the rapid rate of change the transitions in an EFM signal. . .are shifted" and the second change is that both shifting of the transitions and compromising the reading ability of disc drives necessarily occur, that is, "are shifted and the ability...". (Emphasis added.) Clearly neither is not present or even suggested in Hogan as pointed out above. Therefore not only does Hogan not anticipate this aspect of Claim 1, Hogan also does not make it obvious.

Claims Distinguish

Therefore Claim 1 clearly distinguishes over Hogan, both as not anticipated by Hogan and also as being non-obvious over Hogan. Hogan teaches only use of a large accumulated DSV, as pointed out above. Hence in three separate respects Claim 1 distinguishes over Hogan, first for calling for the "rapid rate of change over a period of time," second that "as a result of the rapid rate of change" and third that both "the transitions...are shifted and the ability of disc drives to maintain optimal head positioning is compromised". Hence Claim 1 clearly is not anticipated or rendered obvious by Hogan.

The claims dependent from Claim 1, which are Claims 2-10, distinguish over Hogan for at least the same reasons as base Claim 1.

Attention is called to dependent Claim 5 which recites (as amended) "wherein the data patterns additionally to the rapid rate of change ensure that the DSV has an absolute value significantly greater than usual." It is acknowledged that Hogan teaches a large accumulated DSV

value. However, Claim 5, since it recites "additionally to the rapid rate of change" clearly distinguishes over Hogan as an additional way by which the DSV causes disc drives to have problems on reading copy discs. Hence, Claim 5 is supported by the original application, is consistent with base Claim 1, and additionally distinguishes over the references.

Each of the other independent claims which are Claims 11, 20, 22 and 23 have been amended essentially the same as Claim 1 although in conformance to their particular terminology. Otherwise each of these other independent claims has been amended identically to Claim 1 and distinguishes over Hogan for at least the same reasons as pertain thereto. Their dependent claims are similarly patentable.

Dependent Claims 14 and 25 have been amended identically to similar Claim 5 referring to "to the rapid rate of change". Again these claims are patentable for at least the same reasons as pertain to their base claims, as pointed out above.

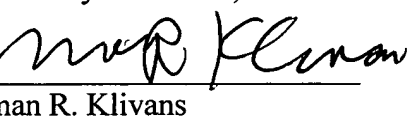
CONCLUSION

Therefore it is respectfully submitted that all pending claims in this case are allowable and allowance thereof is requested. If the Examiner contemplates other action, please contact the undersigned at the telephone number given below. This Amendment is filed under Rule 34. The correspondence address remains that of Macrovision Corporation.

In the event that the U.S. Patent and Trademark Office determines that an extension and/or other relief is required, Applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or fees due in connection with the filing of this paper to the undersigned's Deposit Account No. 03-1952 referencing docket no. 136922003800.

Dated: November 9, 2005

Respectfully submitted,

By 

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